

G. PEDICULARIA L., var. **intercedens** (Pennell), comb. nov. *Aureolaria pedicularia* (L.) Raf., var. *intercedens* Pennell in *Torreya*, xix. 207 (1919).

G. PEDICULARIA L., var. **austromontana** (Pennell), comb. nov. *Aureolaria pedicularia* (L.) Raf., var. *austromontana* Pennell in *Proc. Acad. Nat. Sci. Phila.* lxxi. 268 (1920).

(To be continued)

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## THE STATUS OF *HICORIA BOREALIS* ASHE

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In 1896 W. W. Ashe described *Hicoria borealis* in an obscure pamphlet (*Notes on Hickories*, 1896) as follows:

“*Hicoria Rafinesque.*

The shag- or scaly-bark Hickories—Bud scales 10 to 12, accrescent and persistent during leafing; nuts angled, white or mealy; leaflets 3 to 7; bark of trunk usually shaggy.

(a) Fruit . . . . [*H. ovata* and *H. carolinae-septentrionalis*]

(b) Fruit rarely globular; husks thin, not splitting to the base, and usually not freeing the nut; nuts more or less angled and pointed.

*H. borealis* sp. nov. Fruit flattened, .5 inch long; husk thin, not splitting; nut white, sharply angled, kernel very large; leaflets 3 to 5, oblong-lanceolate, smooth, not dotted beneath with resinous globules. Region of the Great Lakes.”

N. L. Britton in his *Manual of the Flora of the Northern States and Canada* (1901), in *Britton and Shafer, Trees of North America* (1908), and in *Britton and Brown, Illustrated Flora of the Northern States and Canada*, second edition (1913), gives a fuller description; C. S. Sargent in *Trees and Shrubs* (1913) and in *Notes on North American Trees. II. Carya* (*Botanical Gazette* **66**: 246, 1918) changed the species to a variety of *Carya ovalis*.

The descriptions by Ashe, Britton, and Sargent do not agree. The original description describes the tree as having extremely small fruit and smooth leaflets, the description by Britton indicates a somewhat larger fruit, and Sargent stresses the hairy twigs and rachises.

After a careful study of all specimens available, the writer



believes that the plant is related to the shag-bark hickory, *Carya ovata*, or might even represent a hybrid between *C. ovata* and either *C. glabra* or *C. ovalis*.

The following collections are the total in the New York Botanical Garden and the Arnold Arboretum:

O. A. Farwell 1354, Belle Isle (Detroit River), Mich., May 31, 1893 (N. Y.), the label being that of Ashe, with "Plants of Southern U. S., W. W. Ashe" marked out, and "no. 1354 Herb. Farwell" inserted; at bottom of label marked: number 3049 Herb. W. W. Ashe. Staminate flowers and leaves.

Farwell 1354, Belle Isle, Mich., October 1893 (N. Y.). Twig, leaves, fruit (in packet). (Each of the two mounted sheets at N. Y. of 1893 collections have May and October material on them.)

Farwell 1354, Belle Isle, Mich., Sept. 14 and Oct. 15, 1897 (N. Y.). Twig, leaves, fruit (attached to twig).

Farwell 1354, Belle Isle, Mich., Oct. 1898 and May 1899 (A. A.). Twig, leaves, pistillate flowers, fruits (some loose).

Sargent, Belle Isle, Mich., May 23, 1899 (A. A.). Staminate flowers and leaves.

Dodge, Grosse Isle, Detroit River, Mich., July 22, 1911 (A. A.). Twig, leaves, immature fruit.

No definite specimens were found in the Gray Herbarium, in the Ashe herbarium at the University of North Carolina, nor in the herbaria of the University of Michigan or Michigan State College.

It is uncertain just what constituted the type specimen for Ashe's species. Three letters throw some light on the problem. The first, from A. O. Farwell to Dr. N. L. Britton, dated Jan. 3, 1898, placed in the herbarium of the New York Botanical Garden, reads as follows:

"Two or three years ago Mr. W. W. Ashe wrote me a personal letter asking me to send him specimens of the hickories that grew in my vicinity as he was making a study of the genus. I complied, sending him specimens of what I termed *H. ovata*, *H. minima*, *H. microcarpa*. I have just heard from him and he says that the material sent as *H. microcarpa* can not be referred to that species which is an extreme eastern one. He at the same time asked for more and fresh material. I am sending him a package similar to the one I send you. He thinks it a peculiar form and may describe it. What do you think of it?

"I have noticed but one tree on the island but there may be any number of them as I have not paid much attention to the hickories. It is a tree 20 to 25 feet in height or perhaps a little more. It begins to branch five



or six feet from the ground, the lower branches being well filled with the nuts which are easily within reach of the hand. The tree is compact and in outline oblong or ovate. I think the bark is close. I would be glad to have your opinion of it."

The second letter, from Professor Sargent to Professor W. J. Beal, dated June 2, 1899, and placed in the herbarium of Michigan State College, reads in part as follows:

"I have been out as far as Belle Isle to look up *Hicoria borealis*. I saw the only plant on the island which is supposed to belong to this species. I was not able, however, to distinguish it from the scaly barked pignut which is not rare. According to Mr. Farwell, Ashe did not describe his species from this tree, although he considered that it belonged to his species. According to Mr. Ashe *Hicoria borealis* is common in central Michigan. Ashe in some respects is a good observer but if I have to depend on what I saw at Belle Isle I certainly cannot admit this species of his . . . ."

Another letter to Professor Beal, dated June 18, 1899, reads in part as follows:

"I do not think Farwell knows anything about *Hicoria borealis* except as it may be found on Belle Isle. Ashe speaks of it growing in the central part of the state . . . Ashe's notes as to its localities are very vague but I suppose you have his paper. If not, I will have what he says about this species copied and sent to you."

It is possible that Ashe had some specimen on hand not so far located or even thrown away, or he may have been describing characteristic *C. ovalis* var. *odorata* such as H. C. Skeels, Grand Rapids, Mich., October 12, 1895, deposited in the herbarium of Michigan State College (though in the same publication mentioned above he described *H. odorata* and its var. *villosa*).

It would appear, however, from Farwell's letter, from the date of publication of the species, and from Ashe's notation on the herbarium label at the New York Botanical Garden that the type came from the collection of Farwell, and would be the specimens at the New York Botanical Garden collected in 1893 from the Detroit River, even though Sargent, probably referring to the vague data of distribution in Ashe's description, did not believe so. Ashe presumably made a tentative description in 1896 from the specimens first received from Farwell, and had hoped to make a fuller description later from new material. The letter of Farwell, his collection-numbers and locality, the letter of Sargent, and the great similarity of the specimens indicate



that all of the above collections of Farwell and of Sargent are from the same tree, and the true description may safely be based on the combination of these specimens.

I have been unable to find in this group of specimens a fruit quite as small as .5 inch long; although the fruit and the nut (loose in the packet) of the 1893 collections are extremely small, the fruit measures 22 mm. long. I believe that Ashe's measurement is a typographical error, or refers to the body of the nut, which is  $\frac{5}{8}$  inch (15 mm.) long, or was described erroneously from memory. The leaves are glandular beneath, but not conspicuously so. The fruit does in most of the collections appear indehiscent, but it is strongly ridged to the base and may dehisce in November after a heavy frost; the nut of the October, 1893, collection is free from the husk.

The descriptions of Britton, apparently based on Farwell's 1893 and 1897 collections, are essentially correct for the type tree. The writer finds, however, that the fruit varies in the different collections from 22–30 mm. long, and is about 20 mm. thick; the terminal bud, as far as collected, is in at least one collection about 10 mm. long, not  $\frac{1}{3}$  inch.

Basing their opinions on the small size of the fruit, on the thinness of the husk, which varies from 1 mm. in the original collection to 3.5 mm. in later collections, on the slender twigs, and on the "indehiscent" fruit, Ashe and Britton considered the tree a good species related to *H. odorata* (now *Carya ovalis* var. *odorata*), and Sargent considered it a variety of *Carya ovalis*.

All specimens show, however, definite characteristic tufts of hairs on the serrations ("ciliate" according to Britton) which the writer has pointed out in previous articles are characteristic of *C. ovata* and which never occur in *C. ovalis*. Furthermore some of the husks are 3.5 mm. thick, as indicated above, the leaves darken in drying, the terminal buds are elongate and are similar to those of *C. ovata*, and the nut is white, ridged, and thin-shelled; these are all features of *C. ovata*.

This may be merely an aberrant tree, or it might be a hybrid between *C. ovata* and either *C. glabra* or *C. ovalis*, with the leaves of the first species and the thin husks of one of the pignuts. The writer believes, at least, that it is closer to *C. ovata*, and here transfers it to that species as a variety:



*C. OVATA* (Mill.) K. Koch var. **borealis** (Ashe), comb. nov. *Hicoria borealis* Ashe, Notes on Hickories, 1896, read before Elisha Mitchell Society, Chapel Hill, N. C. and distributed at the meeting; in Britton, Manual of the Flora of the Northern States and Canada, 1901, p. 325; in Britton and Shafer, Trees of North America, 1908; in Britton and Brown, Illustrated Flora of the Northern States and Canada, 2nd edition, 1913, p. 583. *Carya ovalis* (Wang.) Sarg. var. *borealis* (Ashe) Sargent, in Trees and Shrubs II, 1913, p. 209. *C. borealis* (Ashe) Schneider, in Ill. Handb. Laubholz. 1906, I, p. 803. *H. ovalis borealis* (Ashe) Ashe in Charleston Mus. Quarterly 1: no. 2: p. 129. 1925. *C. ovalis* var. *borealis* (Ashe) Sarg. in Manual of Trees of North America 1933: p. 195.

Differs from the typical species in the usually thin husk, in the somewhat flattened fruit, and in the small size of the fruit. The specimen of Dodge seems to belong here, with small thin-husked fruit and with tufts of hairs on the serrations, but the twigs and leaves are rather hairy as in many trees of *C. ovata*; the specimens from the type tree are glabrate (somewhat minutely puberulent). It was probably on this specimen of Dodge that Sargent based his description of *C. ovalis* var. *borealis*. It is interesting to note that in Otis, Michigan Trees (1915 and later) and in at least two publications of Gleason, *C. microcarpa* (now *C. ovalis*) is described as having hairy twigs. I have not seen any specimen of positive mature *C. ovalis* with clearly hairy twigs.

This is a weak variety. The fruit and nut are about the same size as *C. ovata* var. *Nuttallii* Sarg., whose nut according to Sargent's Manual of Trees (1933) is 15 mm. long and 10–12 mm. broad. Sargent states that the fruit of *C. ovata* ranges from 1 to 2½ inches long (2.5–6.2 cm.) with a husk 3–12 mm. thick.

It should be pointed out that this variety would be impossible to distinguish in a sterile condition from ordinary *C. ovata*.

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ASTER ONTARIONIS THE SAME AS A. PANTOTRICHUS (A. MISSOURIENSIS).—Although the plant generally known as *Aster pantotrichus* Blake (*A. missouriensis* Britton, 1898, not *A. missouriensis* O. Ktze., 1891) is one of the most common species of the Middle West, the late Dr. K. M. Wiegand saw only a few imperfect specimens of it when he prepared his account of *Aster*